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WHAT IS CLAIMED AS INVENTION IS:

1. A method of sealing an opening in a blood vessel wall through an access passage in the skin and tissue of a patient comprising the steps of:

- a) inserting an expandable member attached to a control member into the blood vessel lumen through the opening in the blood vessel wall while the expandable member is in a collapsed condition smaller than the blood vessel wall opening so that the control member extends out of the blood vessel wall opening and the access passage exteriorly of the patient;
- b) expanding the expandable member to an expanded condition larger than the blood vessel wall opening;
- c) pulling the expandable member back against the blood vessel wall opening using the control member to form a seal at the blood vessel wall opening;
- d) inserting a collagen plug into the access passage around the control member while the seal is maintained at the blood vessel wall opening until the collagen plug is located at the blood vessel wall opening;
- e) after a coagulum is formed at the blood vessel wall opening to seal the opening, deflating the expandable member to the collapsed condition; and,

- f) retracting the collapsed expandable member through the collagen plug while leaving the collagen plug in position so that the coagulum seals the opening through the collagen plug.

2. The method of Claim 1

wherein the step d) further includes the substep of housing the collagen plug in a retractable barrel member while the collagen plug is inserted into the access passage; and,

further including the step of:

- g) retracting the retractable barrel member from around the collagen plug while maintaining the collagen plug in position in the access passage.

3. The method of Claim 1 further including the step of inserting that portion of the control member extending exteriorly of the patient through the collagen plug between steps a) and b).

4. The method of Claim 1 wherein step d) further includes the substep of visually indicating when the end of the collagen plug is located at the opening in the blood vessel wall.

5. The method of Claim 2 wherein step g) further includes the substep of fixedly locating that end of the collagen plug remote from the blood vessel wall opening with respect to the blood vessel wall opening to maintain the collagen plug in position while the retractable barrel member is removed.

6. A blood vessel sealing system for sealing the wall opening in a blood vessel through the access passage formed through the skin and tissue in the patient comprising:

a) sealing means including

an elongate control portion having a cross-sectional size smaller than the cross-sectional size of the access passage and the blood vessel wall opening,

an expandable portion thereon having a collapsed condition smaller than the cross-sectional size of the access passage and the blood vessel wall opening and an expanded condition larger than the cross-sectional size of the access passage and the blood vessel wall opening, and

expanding means for selectively expanding and collapsing said collapsible portion of said sealing means;

b) an elongate collagen plug defining opposed leading and trailing ends thereon and a central passage therethrough adapted to receive the control portion therethrough and to receive the expandable portion of said sealing means therethrough while said expandable portion is in the collapsed condition; and,

c) applicator means for selectively inserting said collagen plug into the access passage around said control portion of said sealing means so

that the leading end of said collagen plug is located at the blood vessel wall opening.

7. The system of Claim 6

wherein said applicator means includes a plug carrying assembly having a prescribed length for use in inserting said collagen plug into the access passage; and,

wherein said control portion of said sealing means includes an indicia marking thereon spaced a prescribed locating distance from said expandable portion to provide a visual indication that the leading end of said collagen plug is located at the blood vessel wall opening.

8. The system of Claim 6 wherein said applicator means includes:

an installation barrel assembly defining a plug carrying chamber therein adapted to receive said collagen plug therein for installation in the access passage; and

retraction means for selectively retracting said installation sheath from around said collagen plug while maintaining said plug at a substantially fixed position in the access passage.

9. The system of Claim 8 wherein said applicator means includes:

tensioning means for increasing the pressure of said expandable portion of said sealing means in the expanded condition against the blood vessel wall opening as said installation is withdrawn from around said collagen plug.

10. The system of Claim 6

wherein said expandable portion of sealing means is an inflatable balloon;
wherein said control portion defines a fluid passage therethrough
communicating with the interior of said balloon at one end thereof;

and

wherein said expanding means includes a controllable fluid source
communicating with said fluid passage exteriorly of the patient for
selectively supplying fluid under pressure to said balloon to inflate and
deflate same.

Sub
A2 (cont)
ADD A3